We next lay our hands upon—

*Tables and Formulæ for the Computation of Life Contingencies, with
Copious Examples of Annuity, Assurance, and Friendly Society Calcu-
lations.   By* PETER GRAY, F.R.A.S., *Associate of the Institute of
Actuaries of Great Britain and Ireland.*   London: Longman, Brown,
Green, and Longmans.   W. S. D. Pateman, Wine Office Court, Fleet
Street.

IF this work were the production of one "to the manner born," and the
business of whose daily life led to such investigations, the reader, however
much he might appreciate its merits, would have no reason for surprise; but
when we state, as we believe we may correctly do, that it has been a labour of
love, a thing quite apart from the author's ordinary occupation, we feel that it
must be looked upon with considerable admiration were its intrinsic worth
less than it really is.   The work might have been, as it appears to us, more
accurately described as a treatise on the art of constructing tables, particu-
larly those required in determining the value of life contingencies, with
logarithmic tables appended—for such it really is : the ground, moreover,
is almost entirely new; no writer has hitherto touched upon it to any extent
so far as regards Life Tables, although many of the methods described were
known; but the introduction of the use of Gauss's Tables, we believe, originates
with Mr Gray, as well as several very important and ingenious contrivances,
which, to use the author's own words, afford greater facilities for the forma-
tion of tables than have hitherto been at the command of the computer.
Throughout the range of applied mathematics, there are few instances in
which tables like those of Gauss are called into requisition more frequently
then in the application now before us.   It constantly happens, in calculations
connected with Life Assurance, that without need to take cognizance of the
natural numbers, a series of logarithmic values is required, which can only
be obtained, with the common table in each case, by double reference.
These Tables however, enabling the computer to pass at once from log. x,
to log. $(1+x)$, effect a saving of one conversion for each value, the vast
importance of which, as regards labour and inability to error, will be readily
understood.   The first chapter is devoted to a description of these Tables
and the manner of using them.   Chapters 2 and 3 treat of compound
interest, and the theory of probabilities—the best mode of constructing the
corresponding Tables being fully detailed in the former.   Chapter 4 contains
the germs of Mr. Gray's new methods, which we can only briefly allude to
as consisting of a different arrangement of the factors employed in the forma-
tion of the usual series and the introduction of differences, which he uses with

great effect: thus, to form column D—from the equation $\dfrac{D_x}{D_{x+1}} = \dfrac{l_x}{vl_{x+1}} = \dfrac{1}{vp_x}$,
he derives the expression log. $D_{x+1} =$ log. $D_x +$ log. vp_x.   Log. p_x is one of
what the author styles his "Elementary Values," and is first tabulated for
each age and then "differenced;" log. vp_x is afterwards readily obtained for
each age, by addition of the differences of log. p_x to log. vp_x, and these values
being in their turn added to log. D_x, the construction of the column is
completed.   The advantages of this mode, where calculations are required
on a limited scale, are to be prized; but on an extended one they will be
found in many particulars of the greatest importance.

Chapters 5 and 6 are occupied with the application of these methods to

the formation of every description of table used in the calculations of life contingencies, including allowances in sickness; and in chapter 7 we have the " Commutation Tables," as they are called, treated in the same fashion.

The 8th and last chapter gives a history of the " Commutation Method," and sets forth the share which Mr. Barrett, Mr. Morgan, and Mr. Davies may be considered as having respectively in its invention and improvement. Every one at all conversant with the subject will probably agree with the author as to the superior claims of Mr. Barrett; but after the perusal of Mr. Hendrik's paper in our first number, it is impossible not to feel considerable doubt whether Mr. Barrett has dwelt with perfect candour in the business.

Such, then, is a brief and imperfect outline of the work before us. Of the order and precision which characterise it throughout—neatness and simplicity of the demonstrations, and minute and laborious accuracy of its details—we fail to give any adequate idea. The book, however, is nothing short of a standard one, and might, we would venture to suggest, be classed with great propriety amongst those selected as the text books in the future examinations of the Institute. χ.

Our space in the present number will allow us to notice only one other publication, viz.:—

A Few Thoughts on Commission, Divisions of Profit, Selection of Lives, the Mortality in India, and other subjects relating to Life Assurance, &c. &c. By SAMUEL BROWN, Esq., F.I.A. London: W. S. D. Pateman, Wine Office Court, Fleet Street. 1849.

THIS is not a very ponderous volume: but amongst those of much greater dimensions, there are probably few whose contents range over so wide a field. The author brings to his task great ability, thorough knowledge of his subjects, and very considerable experience in practical details. The information he has collected from such various sources is not only in itself extremely interesting, but is especially valuable as indicating the sources themselves, scattered, as many of them are, in reports and periodicals where few persons would expect to find them. This is particularly the case in the articles on the Mortality in India, in which the author appears, after searching in every direction, to have got together whatever materials are to be found in relation to the subject; so that anyone investigating it may at once ascertain the *quantum* of data within his reach. The observations on the Division of Profits may be read with great advantage, but we can scarcely think that any society or company ever contemplated the mode of valuation which Mr. Brown is so severe upon. To use a true table of mortality and interest, to determine with them the value of the premiums actually charged, and to divide the surplus resulting from such a process, is clearly to leave nothing whatever but a mere provision for the sums assured. So wild a project could hardly, we think, have received encouragement in any respectable quarter. But bad as it would be, the much vaunted practice of valuing by means of the table from which the premiums charged are derived is little better; so far from its "*dividing profits only as they are realized*," the result is frequently quite the reverse! But to return: " The Effect of the Selection